**Science 1.6** Investigate the implications of the use of carbon compounds as fuels **Internal, 4 credits**

1. *Implications* *of the use of carbon compounds as fuels* consider the importance and effects of their uses and combustion products on humans or the environment and could include: the efficiency of fuels, air or thermal pollution, effect on global climate, ocean acidification, use of non–renewable resources and/or food crops for fuels.
2. *Carbon compounds* will typically include alkanes and alcohols. Systematic names and structural formulae of carbon compounds are restricted to straight chain alkanes up to 8 carbon atoms, methanol and ethanol.
3. In the science learning area of the curriculum ‘investigate’ has the broad meaning of scientific research i.e. carrying out an inquiry. In this standard investigation will involve collecting information about the implications of the use of carbon compounds as fuels. The information could come from a variety of sources such as direct observations, collection of experimental data, resource sheets, photos, videos, websites and reference texts.

**Chemistry 1.3** Demonstrate understanding of aspects of carbon chemistry **External, 4 credits**

1. *Aspects of carbon chemistry* will be selected from:

* Structure
  1. names of carbon compounds using systematic nomenclature
  2. structural formulae
  3. covalent bonding between atoms.
* Properties
  1. solubility in water
  2. trends in melting and/or boiling points
  3. complete and incomplete combustion reactions
  4. polymerisation reactions of ethene and propene.
* Production
  1. fractional distillation of crude oil
  2. cracking of fractions
  3. fermentation
  4. methanol from natural gas.
* Uses and importance
  1. fuels
  2. polymers from ethene and propene.
* Effects of combustion products on human health and the environment.

Carbon compounds are restricted to straight chain alkanes, ethene and propene, methanol and ethanol. Structures and names of alkanes are limited to those alkanes containing no more than 8 carbon atoms.

1. *Demonstrate understanding* completing word equations

*Demonstrate in-depth understanding* writing word equations or completing given symbol equations.

*Demonstrate comprehensive understanding* writing balanced symbol equations.